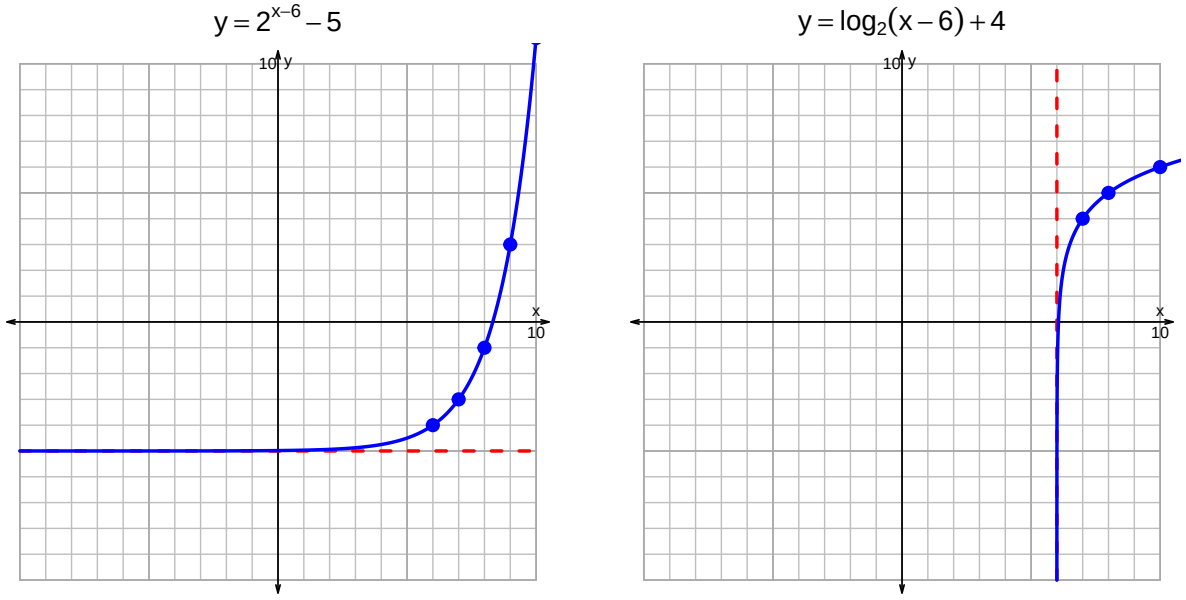
Name: Date:

s18quiz: EXP LOG (Solution v103)

1. Graph $y = 2^{x-6} - 5$ and $y = \log_2(x-6) + 4$ on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$23 = \left(\frac{7}{4}\right) \cdot 2^{3t/5}$$

Divide both sides by $\frac{7}{4}$.

$$\frac{23 \cdot 4}{7} = 2^{3t/5}$$

Take log, base 2, of both sides.

$$\log_2\left(\frac{23 \cdot 4}{7}\right) = \frac{3t}{5}$$

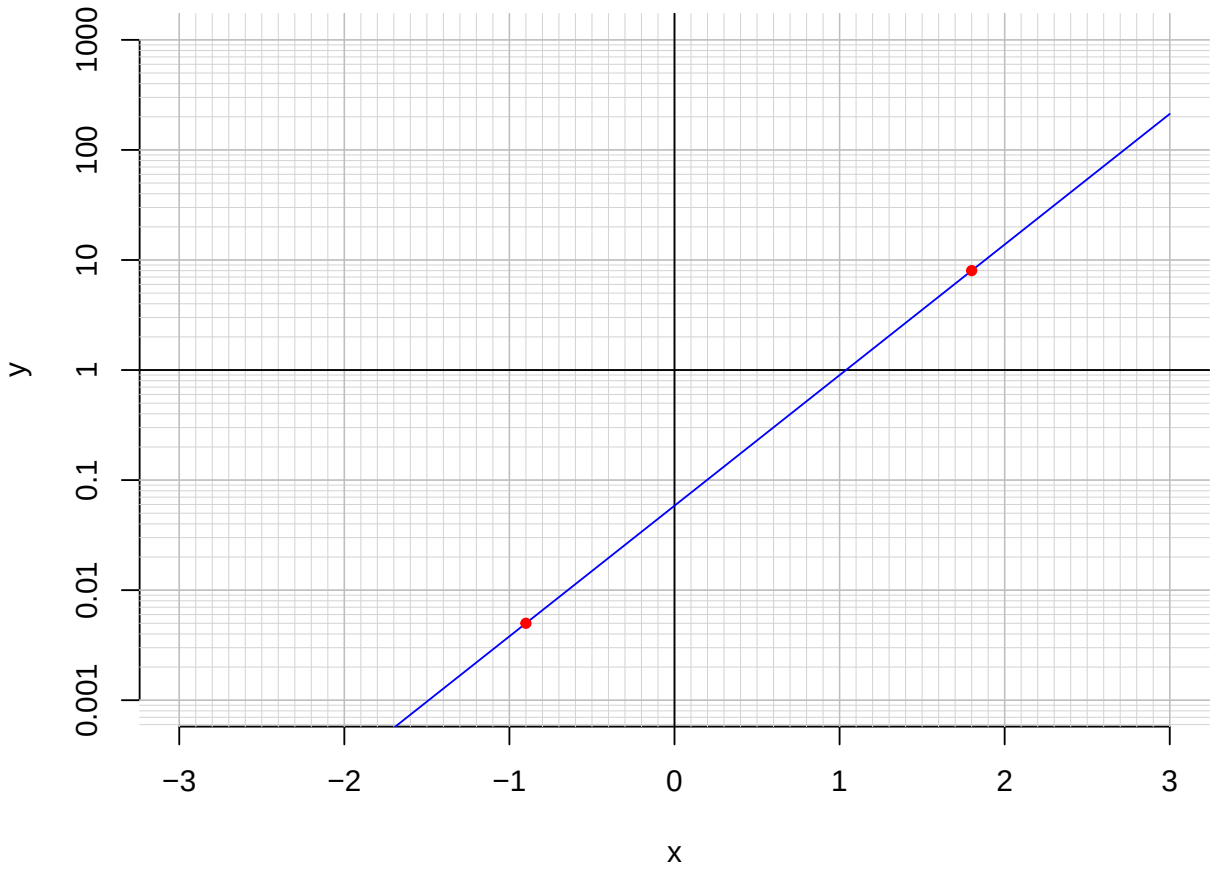
Divide both sides by $\frac{3}{5}$.

$$\frac{5}{3} \cdot \log_2\left(\frac{23 \cdot 4}{7}\right) = t$$

Switch sides.

$$t = \frac{5}{3} \cdot \log_2\left(\frac{23 \cdot 4}{7}\right)$$

3. An exponential function $f(x) = 0.0585 \cdot e^{2.73x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(-0.9)$.

$$f(-0.9) = 0.005$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{1}{2.73} \cdot \ln\left(\frac{x}{0.0585}\right)$$

c. Using the plot above, evaluate $f^{-1}(8)$.

$$f^{-1}(8) = 1.8$$